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The selection of foreign trade barriers for WTO litigation

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Abstract

The WTO agreements provide rules regarding the conduct of international trade. They regulate government interventions in trade policy that might impair the benefits accruing to their trade partners and the latter's industries. In order to curb the incentive to install WTO-inconsistent trade measures, the WTO agreements provide member states with the possibility to challenge other members' trade policies. Over the last two decades, WTO disputes have revolved around all kinds of trade barriers. However, a quick look at the list of WTO disputes indicates that certain Foreign Trade Barriers (FTBs) are more prone to litigation than others. This chapter studies why certain FTBs are often selected for WTO litigation whereas others are only seldom challenged. We present a game-theoretic approach and argue that the pre-litigation game that plays out in anticipation of a WTO dispute has a strong impact on the selection of FTBs for WTO litigation. The government-industry interaction that takes place before a WTO complaint is filed, determines the number of complaints, and which party provides the financial support for preparing a complaint. The veto power of governments in filing a WTO complaint explains why certain trade barriers, such as export barriers installed by the foreign country, are more prone to litigation than when the foreign government employs a trade policy that impacts the foreign imports in the domestic country.

2.1 Introduction

Over the last decades, the world has witnessed a significant increase in international transactions and international trade. In an ever more globalizing economy, goods and even services are typically crossing several borders from their point of production to their final point of sale. The dependency of countries on one another has serious consequences for countries, industries, and consumers. On the one hand, domestic consumers increasingly rely on the production of foreign industries to satisfy their demands. On the other hand, domestic industries rely on foreign markets to absorb part of their production. However, the rise of international trade has also given governments vast power to intervene in international competitiveness by erecting trade barriers. The installation of trade barriers might in turn put serious stress on ever more interdependent economies.

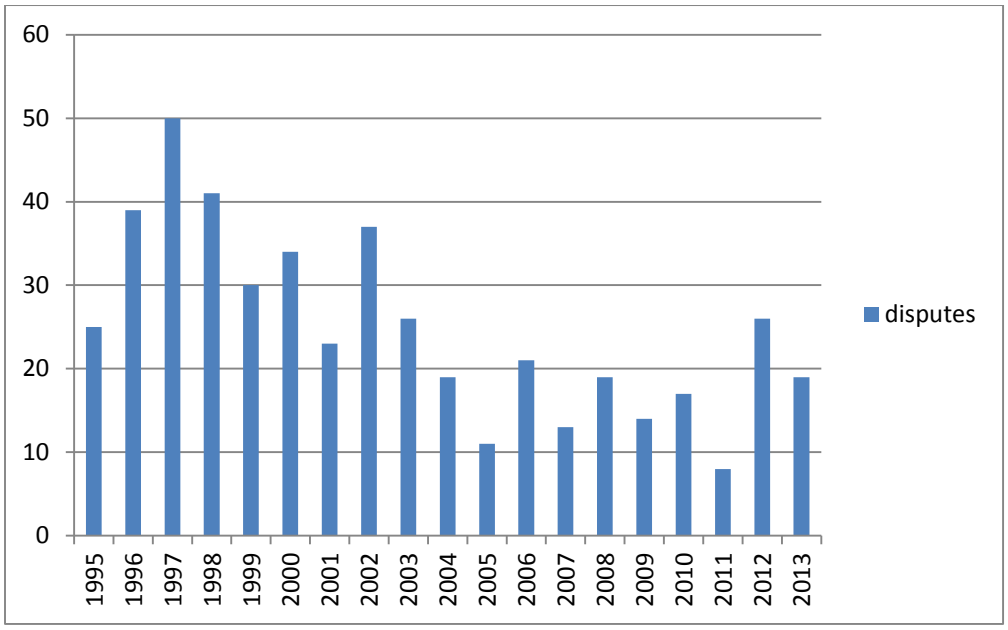
This increased interdependence has spurred countries to draft a rulebook that regulates trade policies. After the second World War, the GATT was negotiated to address this need. In 1994, the GATT became part of a full-fledged international organization, the WTO. The WTO agreements describe which trade policy measures can be taken under which circumstances, and hence limit the number and variety of trade barriers a country is allowed to install. In order to become a member to the WTO, a country needs to put its trade policies in compliance with the provisions in the WTO agreements, and might be requested by other countries to offer certain liberalization commitments if it is to benefit from the trade liberalization efforts of the other WTO members (see for example Van Kerckhoven and Luyten, 2014).

Still, each individual country faces an incentive to forfeit the agreement by installing a trade barrier that is inconsistent with its WTO commitments. By violating the agreement, a country can reap some terms-of-trade benefits (Bagwell and Staiger, 2002:5). When a foreign country installs FTBs, this might affect the profitability of domestic industries, and might also have an impact on the utility of the domestic country's government. In order to enforce compliance with the WTO agreements and ensure the benefits accruing from adherence to all members, the WTO members decided to add the DSU to the WTO agreements. The DSU grants every WTO member country (the plaintiff/ complainant) the right to file a complaint at the WTO when it observes a trade barrier installed by another WTO member (the defendant) that potentially is inconsistent with that member's WTO obligations. A wide variety of FTBs might be considered inconsistent with the WTO agreements. In general, all policies that impair or lead to a nullification of the benefits accruing to a WTO member from the signing of the WTO agreements, can be the subject of a WTO complaint. In response to such a complaint, a panel of WTO experts might be

composed that rules on the consistency of the trade measure in question. If the country accused of acting in a WTO inconsistent manner is found guilty, it needs to adapt its policy and bring it back in conformity. If it fails to do so, the complainant may be granted the right to suspend some of its concessions towards the defendant.

The increased dispute settlement powers of the WTO (compared to the GATT era) has spurred countries to initiate more than 400 WTO disputes in the first two decades of the functioning of the WTO (see Figure 1).[1]

Figure 1: The number of WTO disputes since its establishment (1995-2013).



As a result, different types of trade obstruction have been subject to WTO litigation. Some of the FTBs feature more prominently on the list of WTO disputes than others. In order to shed light on the prevalence of the different FTBs, we studied all 427 WTO disputes in Horn and Mavroidis (2011) and divided them into three categories. We considered the FTBs from the perspective of the complainant.[2] We grouped the FTBs according to whether the complainant was filing against a trade barrier that had an effect on its exports to, or imports from the FTB imposing country. The trade barriers influencing imports were again split in two groups depending on whether the FTB resulted in a higher or lower level

[1] This number is particularly high when compared to the 101 cases filed in the GATT years (1947-1994).

[2] For our analysis, we categorized the disputes with regards to the way they are presented on the WTO website, rather than the legal provisions. It is rather difficult to divide WTO disputes along the categorization by studying the legal provisions. For example, Art. I:1 and Art.XI:1 group both import and export taxes, and quantitative restrictions on both, which makes it rather difficult to subdivide disputes into export- and import-lowering barriers.

of imports. Indeed, the foreign country's trade policies influence the imports of the foreign country into the domestic country.[3] It is important to note that WTO disputes are generally of a bilateral nature, even though the WTO itself is a multilateral organization and notwithstanding the fact that some disputes have involved several plaintiffs. The results are presented in table 1.

Table 1: FTBs at the WTO

FTB	**# of disputes**
Export Barrier	350
Import-strengthening barrier	47
Import-lowering barrier	7

The first category, export barriers, groups all FTBs for which the domestic country is the exporting country. This category groups all instances in which the foreign country has installed a measure that obstructs the exports from the domestic into the foreign country. Since we deal with WTO litigation from the perspective of the domestic country, we refer to this category as the export barriers category. A first and highly prevalent subcategory consists of import taxes in the foreign country that exceed the levels allowed by the foreign country's WTO commitments. In a second subcategory there is a wide variety of measures inconsistent with the most favored nation (MFN) clause and the national treatment clause. Generally, the MFN provision requires non-discrimination by a government between products irrespective of their origins. The national treatment provision stipulates equal treatment between imported and locally-produced goods. Non-application of these provisions can impose a barrier to trade. Some examples include standards, and rule-of-origin clauses. Third, anti-dumping measures, countervailing duties (CVDs) and safeguards also restrict the exports of the complainant to the defendant's economy. Anti-dumping measures, CVDs and safeguards are relatively common and can be legitimate. However, they are often carried out or installed in ways inconsistent with the WTO agreements. In essence, they have an impact similar to the other export barriers but are installed either as retaliation against a WTO-inconsistent measure imposed by the complainant or as a means to offer temporary protection.

Next, we have two types of trade barriers that a foreign country can employ to affect the domestic country's imports. A caveat with these cases is that the WTO provisions are less demanding and far-

[3] We do not study cases whereby the foreign country has installed an import subsidy on the domestic country's exports as these have never been addressed in any WTO complaint.

reaching than the WTO provisions on export barriers. This might lower the number of complaints regarding this type of FTBs.

The second category of FTBs, the import-strengthening measures, contains the measures that result in an increase of the imports of the foreign country into the domestic country. The prime example of a potentially WTO-inconsistent foreign FTB in this category is an export subsidy. By using an export subsidy the foreign country supports its industry and strengthens its competitiveness in the domestic market. Within the WTO, export subsidies are prohibited when they are contingent upon export performance, meaning that the subsidy is only granted when certain export targets are achieved. Consequently, a trade policy that subsidizes firms when they reach a certain level of exports is prohibited. The Agreement on Subsidies and Countervailing Measures (ASCM) and the Agreement on Agriculture further rule out some other subsidies. Another measure in this import-strengthening barriers category is the dumping of products on the foreign market. Dumping might not be consistent with WTO legislation, but the WTO does not regulate as such the actions of companies engaged in dumping. However, it provides countries with the opportunity to undertake action against the dumping of products on their domestic markets when this causes or threatens to cause material injury (GATT Art. VI).

A third and last category of FTBs consists of import-lowering measures. These are trade measures that result in a decrease of the imports from the foreign country into the domestic country. The best example of such policies is an export tax. The WTO regulation dealing with export restrictions is relatively limited, offering ample space for strategic policy considerations. GATT XI requires members to eliminate all prohibitions and quantitative restrictions on exports with the exception of those imposed "temporarily" to prevent and alleviate food shortages and those intended to allow time for the application of regulations such as classification and grading. Yet, it does not restrict members from imposing duties, taxes or other charges on exports. However, some newer WTO members were required, during their accession negotiations, to commit themselves to stricter rules. They were obliged to phase out export taxes or to limit them to a designated number of tariff lines with a bound rate. This was one of the additional concessions that they had to agree upon before becoming a WTO Member (see for example Van Kerckhoven and Luyten, 2014 on the Chinese accession). In any case the weak WTO rules with regards to this type of FTB might partly explain the lower number of disputes.

All these trade measures have been categorized in Table 1. However, the numbers of the disputes involving the different FTBs provide little indication on how often the different types of FTBs are still being imposed.

If we were to have data on all trade barriers erected, we could easily compare the number of disputes relative to their usage. However, as observed by Horn, Nordström and Mavroidis (1999), we do not know the extent to which countries erect disputable trade measures. As a result we cannot directly determine whether there exists any biases in which trade barriers make it to the WTO by simply comparing the distribution of complaints with the set of installed trade barriers, since the latter remains unknown due to a shortage of data**.** For that reason, we build a simple game theoretic model that addresses the puzzle of 'what explains why certain FTBs are often disputed within the WTO, and others rarely?'.

A possible answer to the differences in the number of times a FTB features in WTO litigation is that countries no longer erect the trade barriers that (almost) never feature on the list of disputes, such as import-lowering measures. Due to lacking data, we cannot directly disagree with this view. However, we feel that there might be another explanation. It might be that some trade barriers are installed without ever being subject to WTO adjudication, whereas others almost always result in litigation.

This paper argues that this might be the result of the domestic 'game' between complainant members' governments and their domestic producers. This game essentially plays out before a WTO complaint is filed. In line with Bown (2005), we take the view that not all imposed trade barriers are challenged at the WTO because governments undertake a calculus and pursue only those actions for which the expected benefits of a WTO dispute outweigh the expected costs.

This paper investigates the role of the domestic industry and its government in the pre-litigation phase. This government-industry interaction is indeed the prerequisite step to any form of WTO litigation (see the extended litigation procedure in Bown and Hoekman, 2005; Bown, 2009). It is surprising that this step has to a large extent been overlooked in the academic literature. As discussed in the literature review in the next section, there is often close cooperation between the industries negatively affected by the FTB and their domestic government. Section three studies the effect of the different FTBs on prices and the utilities of industry and government. Section four presents a simple game-theoretic model of the pre-litigation interaction that is subsequently solved for in general terms. Section five then provides the specific characteristics of FTBs, and lays down their effects on government and industry

utility. In section six, we extend the game to incorporate different types of governments. The paper ends with some conclusions. It shows that the pre-litigation interaction between governments and industries strongly impacts the number of complaints filed at the WTO. A related finding is that the veto power of the government in filing complaints determines the selection of the type of FTBs for litigation.

2.2 Literature review

The interaction between industries and their government (or public-private partnership) in the build-up to the filing of WTO disputes has to a surprisingly large extent been overlooked in the literature. Compared to the significant attention devoted to the WTO and its dispute settlement, the study of this very initial step to a WTO dispute has drawn only limited attention. Bown (2009) added this step as the first step to what he called the Extended Litigation Procedure of WTO dispute settlement. This Extended Litigation Procedure has as objective the removal of WTO-inconsistent FTBs. This is also the main reason for the government-industry collaboration. The installation of WTO-inconsistent trade barriers can negatively affect the welfare of other WTO members, and these members' domestic industries. Indeed, when a foreign country reneges on its commitments or the WTO agreements, the industry in the other WTO member country (in this paper, the domestic country) might lose competitiveness vis-à-vis the industry in the foreign country. This affects the other WTO members' domestic industries' profitability and might even threaten the survival of the domestic industry (Davis, 2012).

As stipulated in the WTO's DSU, the WTO's Dispute Settlement Body (DSB) can review whether the foreign country has violated the WTO provisions. However, the WTO DSB only starts its work after the filing of a complaint by the domestic country's government. It is indeed important to note that only governments of WTO member states are allowed to file a complaint at the WTO. Before a complaint is filed, the government will have to 'exercise its judgment as to whether action under the [WTO] procedures would be useful.' (WTO DSU Article 3.7). This gives the government veto power in the initiation of WTO procedures. The home government will conduct a cost-benefit analysis when deciding to file a complaint. Individual industries have no direct access to the WTO DSB, and consequently have to rely on their domestic government to initiate a WTO dispute, and enforce their market access. The fact that private parties (such as industries) have no direct access to the WTO's DSU stands in strong contrast with the practice in other international fora, such as bilateral investment treaties, and the courts and conventions dealing with human rights. In the WTO, a complainant government is

consequently a 'political filter' (Sykes, 2005) or a veto player (Crombez et al., 2006) that retains discretion in the bringing of a claim, or the decision to settle or withdraw it. Sykes (2005) sees this 'filtering' by governments as the result of the nature of trade agreements. Only a reciprocal agreement will incentivize governments to lower trade barriers, which explains why trade agreements are government-to-government understandings, without allowing private parties direct standing. Still, the home government does not act in isolation, and an industry can, and often does, exert influence and pressure on its government to enforce its market access in the foreign country. Indeed, due to the increasing economic involvement of industries in foreign markets, industries often are requesting and advocating the removal of FTBs (Schaffer, 2003: 27, Hoekman and Kosteci, 2009).

The literature has touched upon a few of the issues important for our exposition on industry-government interaction in the filing of WTO disputes. An important issue in this paper is the cost of litigation in WTO dispute settlement. Filing a WTO complaint is costly.[4] Before initiating a WTO dispute, the case will need to be prepared for adjudication, which is highly time-and effort-consuming. Van Kerckhoven and Crombez (2015) presents a game-theoretic model that shows that litigation cost is one of the main determinants once a dispute is filed at the WTO. This is particularly important for developing countries, which lack the deep pockets necessary to engage in WTO litigation. Indeed, the involvement of outside experts and legal advisors is often necessary to adequately prepare a dispute for WTO litigation, but comes at a cost (Busch, Reinhardt and Schaffer, 2009, Davis and Bermeo, 2009). For example, the litigation costs of the seals dispute between the EU and Canada (DS 400 and DS 401) would be up to ten million Canadian Dollars (for Canada), and this to save a one million Canadian dollar hunt.[5] The costs of preparing a case for litigation are often in the same order as the costs once the dispute is initiated.

There is not much information in the academic literature regarding the preparation of a case for WTO litigation. Davis and Shirato (2007) found that in Japan the industry generally supports the preparation of WTO complaints financially. Bown and Hoekman (2005:289) observe that the pre-litigation economic and legal research necessary to establish the legal merits and economic benefits to pursuing a case is

[4] Bown and Hoekman (2005) argue that a WTO litigation bill can easily end up being more than $500,000 even excluding the pre-litigation efforts.

[5] See http://www.theglobeandmail.com/news/politics/a-10-million-fight-to-save-1-million-hunt/article1200631/ . In the end the EU was requested to adapt its policy, as it failed to justify the EU seals regime under Article XX of the GATT 1994.

most often carried out by private actors, such as the industry. In this paper, we allow the industry to decide whether it wants to offer financial support when the government is not inclined to sponsor a WTO complaint. A government can however always ensure that a complaint is filed when it bears the cost of preparing the case for litigation itself.

The industry cannot only help by devoting financial resources to the preparation of a WTO complaint. It can also contribute by pointing out WTO-inconsistent FTBs to its domestic government. Over time, WTO disputes have increasingly turned on the factual evidence presented as opposed to the application of simple *a priori* tests or principles, a reflection of what might be called a "legalization" of WTO dispute settlement. This is quite a dramatic shift from the nature of disputes under the GATT system. As Jackson, Davey and Sykes (2008, p.272) note, "[i]n GATT dispute settlement, it was often the case that factual issues were not that important." The industry, due its continuous encounters with the foreign market, is the perfect partner to notify the government of WTO-inconsistent FTBs and supply the factual evidence. The government typically does not have the resources to monitor all FTBs. Of course, some WTO members are more apt to observe WTO-inconsistent FTBs. Some for example have trade missions in several other WTO members allowing them to gather more information on that country's trade policies.

The cost of WTO litigation, and the role industries play in pointing out FTBs, explain why both the government and the industries can benefit from collaborating in the filing of WTO disputes. Indeed, the vast majority of WTO complaints are the result of private economic actors requesting their domestic government to undertake action against trade measures in foreign markets. By collaborating with their domestic government, private parties might attempt to use the WTO legal system to advance their commercial interest. However, the government still holds veto power, and private industries will have to convince their public authorities to represent their interests. So, this collaboration might result in different outcomes. Sometimes industry and government work together to enforce market access abroad. Concerning a potential complaint of Ukraine regarding Australia's plain packaging plan for cigarettes (namely the removal of brand signs on tobacco products), for example, Philip Morris International stated the following:

"We have been in contact with many of these countries, including on the trade and legal issues associated with the [plain packaging] policy," it said. "It is commonplace for affected industries to

support [individual] countries in WTO disputes and we are open to supporting governments that challenge Australia on plain packaging."[6]

Governments have also initiated WTO disputes without support from the private sector. This has been the case in for example US-Foreign Sales Corporations (DS-108) and EC-Customs Procedures (DS-315). In both cases, the domestic industry was not in favor of removing the FTB, but the government decided to undertake action nonetheless (Horlick and Boeckmann, 2012).[7]

Some WTO member states have developed special institutions or frameworks allowing companies and industries to bring a potential WTO-inconsistent FTB to the government's attention as the government typically lacks this information. This results in a closer public-private partnership. The most notorious of these is the United States' Section 301 of the Trade Act of 1974, which was still drafted during the GATT period. This act allows the President to take all appropriate action, including retaliation, to obtain the removal of any policy or practice of a foreign government that violates an international trade agreement or is discriminatory and burdens or restricts US commerce abroad. These cases can be initiated by the United States Trade Representative (USTR) or as the result of a petition filed by a firm or industry.[8]

This trade act was amply used during the GATT years: 107 out of 189 US Section 301 investigations made it to GATT/WTO dispute settlement in the 1975-2000 period (Pelc, 2010). However, after the coming into action of the WTO and the accompanying dispute settlement changes, the US is no longer allowed to unilaterally retaliate against FTBs without authorization from the WTO. If it were to do so, the targeted country could respond by initiating a WTO dispute regarding the WTO consistency of the unilateral nature of the retaliation. This has changed the dynamics of Section 301 considerably, but the informal public-private relationships that resulted from this cooperation are still very important in bringing industry's complaints to the government's attention, and hence potential WTO adjudication. The USTR still conducts a yearly Special 301 report, identifying FTBs to US companies and products with a focus on Intellectual Property Rights.

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[6] See http://www.ft.com/intl/cms/s/0/314c9446-91fb-11e1-867e-00144feab49a.html#axzz3FkRheV6m

[7] EU multinationals, in general, did not favor the EU complaint against the US Foreign Sales Corporations Tax, because it was estimated that as much as one -third of the economic benefits of the US export subsidy went to US affiliates of EU companies. Also, the EC – Customs Procedures case was brought by the Office of the United States Trade Representative for small businesses with apparently very little US corporate support. This was in part because sophisticated US companies could use the differences in procedures at the different EC ports to "pick and choose" which products to bring in at which EC ports to minimize customs duties and other issues.

[8] The US Section 301 has been targeted in a WTO complaint as well (DS152 United States --- Sections 301--310 of the Trade Act 1974). Pelc (2010) found that unilateral trade pressure (US Section 301) is significantly less likely to elicit concessions than actions through the multilateral WTO channel.

In Europe, industries can lodge a complaint with the Commission.[9] The Commission can then conduct Trade Barriers Regulation (TBR) investigations.[10] The TBR is an instrument, which has been in effect since 1995, aiming at helping EU businesses to overcome FTBs. It establishes rights for private parties and industries to complain about illegal trade practices of third countries, and to request the EU authorities to intervene swiftly and effectively. The TBR is specifically designed to remove obstacles to trade in third countries, as well as to tackle unfair foreign trade practices that cause injury within the EU internal market (European Commission, 2008).[11] The TBR grants individual companies legal rights to petition the Commission to investigate trade matters and bring WTO claims on their behalf.

Both the US Section 301 and the EU TBR are primarily designed to give private parties the possibility to report a perceived WTO-inconsistent trade barrier put in place by third countries. It is noteworthy that the European system is also often hurt by differences in interests among its member states.[12] Schaffer (2003) has looked deeper into the US and the European mechanisms and the differences between them. He argued that the US system is more bottom-up oriented while the EU approach consists more of a top-down approach. Bown and Hoekman (2005) argue that most developed countries have these kinds of schemes, whereas developing countries do not. Moreover, these authors and Hoekman and Kostecki (2009) argue that, even though the ACLW might help once a dispute is initiated, it does not help to identify potential WTO cases.

The next sections provide a first attempt to model the interaction between industries and governments in the selection of FTBs for WTO litigation

[9] Member states have this right as well.
[10] See http://ec.europa.eu/trade/policy/accessing-markets/dispute-settlement/trade-barrier-investigations/index_en.htm (Council Regulation N°3286/94). Since 1996, more than 24 TBR cases have been initiated (see http://ec.europa.eu/trade/policy/accessing-markets/dispute-settlement/trade-barrier-investigations/index_en.htm).
[11] See http://europa.eu/rapid/press-release_MEMO-09-434_en.htm?locale=en.
[12] Even though trade policy is in essence an EU competence (Art.207 Treaty on the Functioning of the European Union).

2.3 The effect of FTBs on prices and utilities

2.3.1 The Equilibrium price

2.3.1.1 Autarky

FTBs can influence the price in the domestic and foreign countries (if the imposing country is deemed large). Since WTO disputes are generally bilateral, we build a two-country model. Even if multiple complainants take part in the same dispute, each individual plaintiff faces similar consequences, even though the latter may differ somewhat depending on the configuration of the supply and demand parameters described below.

We consider two countries: the domestic or home country (h) and the foreign country (f), which has installed a WTO inconsistent trade barrier on a product that is produced in both countries. As is standard in most of the literature, the domestic and foreign markets are perfectly competitive.[13] Domestic supply is denoted by S_h and foreign supply by S_f. Similarly, domestic demand is denoted by D_h and foreign demand by D_f. Consider a general model of supply and demand where supply is a linear function of price: $S_z = a_z + e_z p_z$. Similarly, demand equals $D_z = b_z - i_z p_z$, with the price denoted by p_z and $z = [h, f]$. The parameters a, b, e, i are assumed to take on non-zero positive values. This set-up reflects a general linear model of supply and demand for a normal good.

Let us first establish the necessary equilibrium conditions when no trade between the domestic and the foreign country is possible (autarky). Assuming that the domestic country has more (less) efficient producers or lower (higher) demand (higher demand), the domestic country's equilibrium price p_h^{a*} is lower (higher) than the foreign price p_f^{a*} in autarky.

Since there is no trade, the domestic and foreign markets need to clear individually. The market clearing conditions then result in the following:

$$D_h(p_h^{a*}) = S_h(p_h^{a*})$$

$$D_f(p_f^{a*}) = S_f(p_f^{a*})$$

with $p_h^{a*} < (>) p_f^{a*}$.

[13] Some recent literature has looked into imperfectly competitive markets (Bagwell and Staiger, 2009 and 2012)

2.3.1.2 Free Trade

When we allow for free trade within this two-country model, both countries can trade without any barriers. As a result a single equilibrium price emerges $p_h^{ft*} = p_f^{ft*}$. The market clearing condition then results in:

$$D_h(p_h^{ft*}) + D_f\left(p_f^{ft*}\right) = S_h(p_h^{ft*}) + S_f\left(p_f^{ft*}\right), \text{ with } p_h^{ft*} = p_f^{ft*}$$

With a single price in both economies, products may transfer from one economy to another (if the supply and demand curves differ between the two countries). $X_{h,f}$ denotes the exports from the domestic economy to the foreign country, and $M_{h,f}$ the imports from the foreign economy into the domestic market. In the remainder of the paper we take the view that the measures used by the defendant are non-prohibitive. Prohibitive measures would result in autarky equilibrium prices, and there would be no trade. The price with free trade will adapt so that one country's exports will equal the other country's imports. Initially, without trade the prices in both economies can differ $p_h^{ft*} \neq p_f^{ft*}$ until trade takes place, which results in a single price p^{ft*}. Consequently:

$$X_{h,f}(p_h^{ft*}) = M_{f,h}(p_f^{ft*}) \text{ if } p_h^{a*} < p_f^{a*}$$

$$X_{f,h}(p_h^{ft*}) = M_{h,f}(p_f^{ft*}) \text{ if } p_h^{a*} > p_f^{a*}$$

Applying the general functions for supply and demand outlined above, the equilibrium price with free trade can be described as follows:

$$p^{ft*} = \frac{(-a_h - a_f + b_h + b_f)}{e_h + e_f + i_h + i_f}$$

Next, the foreign country can employ a strategic trade policy by erecting a FTB. Strategic trade policy and the use of trade barriers can result in a change of the price of a product.

2.3.1.3 Export Barriers

Let us first look into an export barrier installed by the foreign country on the exports of the domestic country (see appendix 1 for more details). Due to the FTB on imports from the domestic country, the price in the foreign country is τ higher than the domestic price. The size of imports will shift until this equilibrium emerges and producers get the same price abroad as they do at home.

At $p_h^{\tau} + \tau$ the imports into the foreign market will indeed be lower than the export to the foreign country at p_h^{ft*}. Consequently, more supply will remain available for domestic consumers, dropping the domestic price. The resulting equilibrium needs to satisfy:

$$X_{h,f}(p_h^{\tau*}) = M_{f,h}(p_h^{\tau*} + \tau)$$

Solving this with the general set-up depicted earlier, shows that the exact effect on the domestic price will depend on the slopes of domestic/foreign demand and domestic/foreign supply, as shown hereunder.

$$p_h^{\tau*} = \frac{(-a_h - a_f + b_h + b_f - i_f * \tau - e_f * \tau)}{e_h + e_f + i_h + i_f}$$

The installation of an export barrier requires the domestic equilibrium price to fall with

$$\frac{(i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}$$

The equilibrium price is hence always lower with an export barrier, but the size of the difference depends on the slopes of both foreign and domestic demand and supply, as well as the size of the export barrier. More specifically, in the case of an export barrier the slopes of foreign demand and supply greatly affect the impact of the FTB on the domestic price.

A very simple example whereby the supply and demand functions in both countries only differ by the intercepts, whereas the slopes for the demand and supply functions are given by e_z and $i_z = 1$ for $z = [h, f]$, shows a decline in the domestic price of $\frac{1}{2} * \tau$.

2.3.1.4 Import-strengthening measures

For the second type of trade barrier, the import-strengthening measures, the following equation gives rise to an equilibrium (see appendix 1 for more details):

$$X_{f,h}(p_h^{\tau*} + \tau) = M_{h,f}(p_h^{\tau*})$$

The result is an equilibrium domestic price of

$$p_h^{\tau*} = \frac{(-a_h - a_f + b_h + b_f - i_f * \tau - e_f * \tau)}{e_h + e_f + i_h + i_f}$$

Hence, the equilibrium price falls with:

$$\frac{(i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}$$

2.3.1.5 Import-lowering trade barrier

Finally, for an import-lowering trade barrier, the equilibrium is given by the following equation (see appendix 1 for more details):

$$X_{f,h}\left(p_f^{\tau*}\right) = M_{f,h}(p_f^{\tau*} + \tau)$$

The result is an equilibrium domestic price of:

$$p_h^{\tau*} = \frac{(-a_h - a_f + b_h + b_f + i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}$$

Due to the imposition of an import-lowering FTB by the foreign country, the domestic equilibrium price rises with:

$$\frac{(i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}$$

Having established the influence of an FTB on the domestic prices, we can now look into how the change of price might alter the utilities of the industry and the government.

2.3.2 Industry utility

The domestic industry derives its utility from the producer surplus it is able to capture. Producer surplus equals the amount producers receive for the total units sold (at the market price) minus what they would have received if they charged exactly their cost for each unit. In essence, producer surplus is the surface between the price realized at the world market and the supply curve (for graphical illustrations, see section 2.5). This surface is made up of a right-angled triangle with as sides the price difference between the intercept of the supply curve and the price, and the quantity supplied. For all set-ups of equilibrium prices, the producer surplus (PS) realized by the domestic industry is given by:

$$u_i = PS = \frac{1}{2} * S_h * (p_h - \underline{p_h})$$

Whereby $\underline{p_h}$ denotes the intercept of the supply curve, consequently $\underline{p_h} = a_h$

More specifically, by using the general set-up of supply and demand, we can rewrite this equation:

$$PS = \frac{1}{2} * (a_h + e_h p_h) * (p_h - a_h)$$

Taking the derivative of the domestic surplus to the domestic price answers the question how a change in domestic price translates into a change in producer surplus:

$$\frac{\partial PS}{\partial p_h} = \frac{1}{2} a_h + e_h p_h - \frac{1}{2} a_h * e_h$$

Since a_h is the intercept for the supply curve (and thus the lowest price for which production will start taking place), $\frac{\partial PS}{\partial p_h}$ is always positive.

Proposition 1: The installation of a FTB can alter the producer surplus, and thus the utility, realized by the domestic industry. When the FTB results in a higher domestic price, the resulting utility for the industry increases. A fall in price due to the FTB lowers the industry's utility.

2.3.3 Government utility

The domestic government is assumed to maximize a social welfare function. This is often modelled as a sum of consumer surplus (CS) and domestic producer surplus (PS) (Baldwin, 1987).

$$u_g = \beta * PS + CS$$

It is thus a combination of both the utility of producers and the utility of consumers. Consequently,

$$u_g = \beta * u_i + u_{con}$$

The factor β denotes the industry's importance relative to the importance of consumer surplus in government's utility. In some cases, the government puts a higher emphasis on the producer surplus. Some industries provide the government with significant financial contributions, and politicians might want to repay them by paying more attention to their grievances. Moreover, it might be the case that the industry at hand is important for strategic reasons (for example agriculture or the defense industry), that the industry provides work to a high number of employees, is a national champion, or is politically strongly organized.

Arguably, few clearly political cases have been filed at the WTO. It has been argued that the China-Windmills case (DS419) was mainly initiated to support the United Steelworkers' Union, which was an early supporter of President Obama. Another dispute in which political stakes might have played out is

the EU-Seals (DS269, DS400, DS 401) dispute. Canada's direct economic gain from removing this FTB was argued by observers to be too small for this dispute to be selected for WTO litigation, but filing this complaint resulted in a gain of political capital as the central government showed its support for the traditional fishing villages in Newfoundland.[14] Another prominent case is the EU-Bananas (DS27) whereby intense pressure and campaign donations from Chiquita might have pushed the US to file a WTO complaint. The same might be true for the Kodak and Pfizer cases (Schaffer, 2003: 24).

These characteristics could provide a government with a higher economic welfare or higher voting share in the next election when it supports the industry (Davis and Shirato, 2007, p.283), and give the industry a certain leverage in the political sphere.

With regards to the domestic producer surplus we established in the previous section that a change of the domestic price will result in a change of the domestic producer surplus in the same direction.

The equation for consumer surplus can be written in a similar way. The consumer surplus can be calculated as the surface of a right-angled triangle with as vertices the domestic demand and the price difference between maximum willingness to pay and the domestic price. CS is thus given by:

$$CS = \frac{1}{2} * D_h * (\bar{p}_h - p_h)$$

Whereby $\bar{p}_h$ stands for the highest domestic price for which a consumer can be found. In essence, this price equals the intercept of the demand curve and the y-axis, hence $\overline{p_h} = b_h$. Solving this gives rise to the following equation:

$$CS = \frac{1}{2} * (b_h - i_h * p_h) * (b_h - p_h)$$

In order to observe in which direction the consumer surplus will shift when the domestic price alters, we take the derivative to the domestic price.

$$\frac{\partial CS}{\partial p_h} = -\frac{1}{2} b_h + i_h p_h - \frac{1}{2} b_h * i_h$$

[14] See http://www.theglobeandmail.com/news/politics/a-10-million-fight-to-save-1-million-hunt/article1200631/ .

Since the highest price any consumer wants to pay equals b_h, any equilibrium price can at most be equal to b_h. Moreover, we can rule out a negative demand, thus $b_h - i_h * p_h > 0$ for any equilibrium. Observing this, a domestic price change negatively affects the domestic consumer surplus.

Since we have derived the equations for producer surplus and consumer surplus, we can establish the full expression for government utility:

$$u_g = \frac{1}{2} * D_h * (\bar{p}_h - p_h) + \beta * (\frac{1}{2} * S_h * (p_h - \underline{p}_h))$$

As it is clear that government utility depends on the sizes of consumer and producer surplus, it is hence not possible to provide a clear cut direction of the effect of the domestic price on government utility.

Let us denote the original government surplus (without the FTB) as u_g. The installation of a FTB by the foreign country shifts the government utility to a new level of u_g^τ. Stating these equations in terms of consumer and industry utility, this gives rise to the following;

$$u_g = \beta * u_i + u_{con}$$

$$u_g^\tau = \beta * u_i^\tau + u_{con}^\tau$$

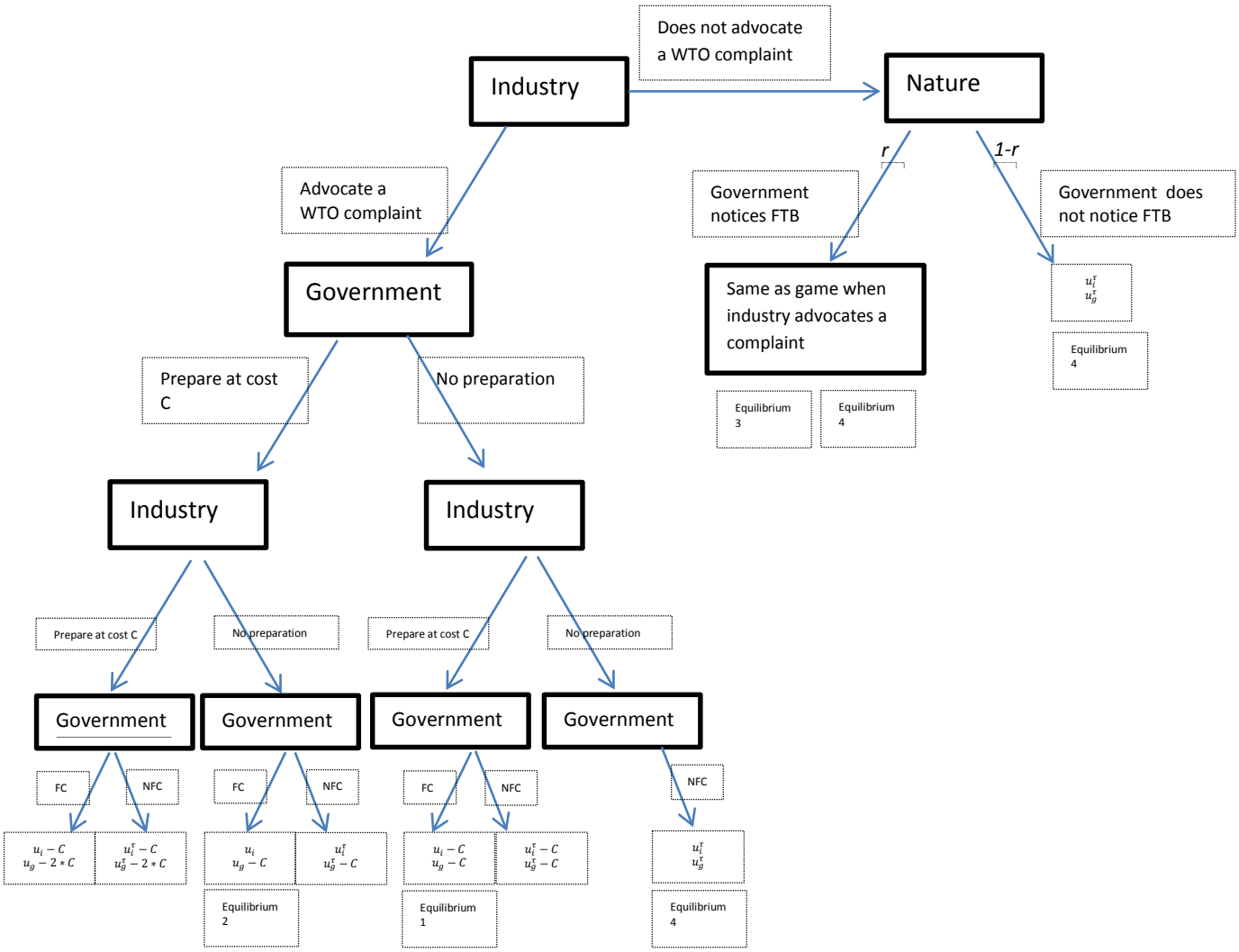
Proposition 2: Producer and consumer surplus are affected in opposite ways by a price change due to the installation of a FTB. Consequently, the government utility is always more balanced since the government cares about both. The ultimate realization of government utility depends on the sizes of the realizations of both producer and consumer surplus. Moreover, the government's industry affiliation β also affects the governmental utility.

2.4 The Game

2.4.1 Basic set-up

The game consists of two players: the home government and its domestic industry. Both are affected by a trade measure (τ) erected by a foreign WTO member. The extensive game form is presented below in Fig. 2.

Figure 2: The game tree of government-industry interaction



We assume that the FTB is perfectly observed by the industry as a result of the industry's continuous encounters with the foreign market. The domestic industry's first action set thus includes [advocate a WTO complaint, do not advocate a WTO complaint]. The public-private partnership frameworks, such as the US Section 301 and the European TBR scheme, enable an industry to easily convey a FTB if the industry favors to do so. When the industry advocates a WTO complaint, the government is informed about the WTO-inconsistent FTB.

If the industry decides to remain silent regarding the FTB, the government, which has less information about trade barriers, discovers the FTB with probability *r*. The probability *r* differs according to how well-endowed the government is to find out about the FTB. Some WTO members have extensive coverage in terms of trade missions, and might consequently find out more easily about FTBs. So, when the industry decides not to inform the government of the FTB, a draw from nature decides whether the government finds out about the FTB. When the government fails to observe the FTB, the game ends and the FTB remains in place as no litigation takes place. If the government detects the FT, the same subgame is played as when the government is notified about the FTB. We further assume that consumers have no direct access to the government.

After the government observes the FTB, either through the industry or by self-discovery, it has to decide whether it wants to invest in the preparation of a WTO case (at a cost C).[15] The possible actions are [prepare at cost C, no preparation].

The industry witnesses the government's action. It then choses whether it wants to pledge financial resources to prepare the case for litigation. The possible actions are [prepare at cost C, no preparation]. Noteworthy, since the government's social welfare function consists of the utility of the industry and the government, the government is also concerned with the cost of litigation when the industry provides the financial resources necessary for filing a case.

At the last stage the government exercises its veto power. The government decides whether a WTO complaint is filed. It choses whether to file a complaint (FC) or not (NFC). However, in order for a WTO complaint to be filed, one of the two players will need to have invested in preparing the case for WTO litigation. If none of the parties devotes financial resources for the preparation, no dispute can be

[15] As pointed out in the literature review, the industry uses the public-private frameworks to contact the government. This suggests that the government's decision to provide support comes directly hereafter, followed by the industry's decision. If we were to alter this sequence, similar results would pop up, in particular since the industry's cost is added into the social welfare function of the government.

initiated even if the parties would like to file a complaint. There are two outcomes at the end of the game: either a complaint is filed, resulting in the removal of the FTB, or no complaint is filed, ending the game with the FTB still in place.

We assume in this paper that the WTO rules require countries not to install any FTBs at all. Hence, complete free trade prevails. In reality different trade barriers are to various degrees consistent with the WTO agreements and the members' commitments. However, for many countries their commitments in terms of FTBs are moving towards free trade. Nonetheless our assumption does not change the results.

We further assume that the foreign government has erected a WTO-inconsistent FTB. The implication of this assumption is that ultimately all filed WTO complaints result in a reversal to WTO levels (more specifically in this paper, to free trade).[16] When a WTO dispute is launched, the foreign country thus has to withdraw the FTB. If no complaint is filed, the status quo prevails and the FTB remains in place.

The home industry and government have perfect information regarding their pay-offs at the different possible outcomes. They further have perfect information regarding the consistency of the FTB with WTO law. It is without doubt that this is more the case for certain trade measures than for others (Sattler, Spiker and Bernauer, 2014). In this model, the WTO panels act swiftly and immediately require the other party to put its policy in line with its WTO commitments.[17]

We use backward induction and look for subgame perfect equilibria. Depending on the way the pay-offs of government and industry with and without a FTB relate to each other, the equilibria of the game differ.

2.4.2 The Equilibrium

At the last step, the government launches a WTO complaint when $u_g^\tau < u_g$. Otherwise it does not. In the penultimate stage the industry decides whether it sponsors a WTO complaint. For the industry to be willing to devote financial resources, it needs to be sure that at the last step the government choses to file a complaint. The industry only sponsors complaints that would be selected by the government for litigation. If the government files a complaint at the last step, the industry is inclined to sponsor when $u_i^\tau < u_i - C$. Otherwise the industry does not help to prepare WTO litigation.

[16] Relaxing this assumption we can see that when a WTO member is not found guilty, its trade policy is in line with the WTO, consequently the outcome would also be that utilities are realized at the WTO levels.
[17] In reality, WTO cases often drag on for many years.

Before the industry decides if it is to devote resources to the preparation of the case, the government has to make the same decision. When $u_g^\tau < u_g - C$, the government will be willing to devote resources to prepare the case. However, when the industry already provided financial support, the government stays away from pledging financial resources, as this would lower its utility. Anticipating potential sponsoring by the industry, a government only provides financial resources for the case, when the industry decided to stay out. However, the government is indifferent to whether it provides the resources itself or whether the industry does so, as both result in the same pay-off.

At the initial step, the industry decides whether it advocates a WTO complaint to its government, or leaves the government in the blank, lowering the odds the government finds out about the FTB. Suppose a complaint is launched at the end of the process. Then the industry notifies the government when $u_i^\tau < u_i$ and does not undertake any action otherwise. When no complaint is launched in the end, the industry does not notify the government.

Before describing the different equilibrium paths, it is clear that the cost of the preparation of a case might deter any complaints to be launched, or might even result in no information transmission. The same holds when the industry anticipates the veto of the government.

Consequently, the following equilibriums may result:

- Equilibrium 1: the industry advocates a WTO complaint, the government does not devote financial resources, the industry sponsors the complaint, and the government eventually files a complaint. This happens when the industry is more hurt by the FTB and the government can assume that the industry eventually steps up and sponsors a complaint. This equilibrium takes place when $u_g^\tau < u_g - C$ and $u_i^\tau < u_i - C$. The resulting utilities are $u_g - C$ and $u_i - C$.

- Equilibrium 2: the industry advocates a WTO complaint, the government devotes financial resources, the industry does not sponsor a complaint, and the government files a complaint. The path to this equilibrium is reached when the industry is only little hurt by the FTB. This equilibrium takes place when $u_g^\tau < u_g - C$ and $u_i - C < u_i^\tau < u_i$. The utilities realized are $u_g - C$ and u_i.

- Equilibrium 3: the industry does not advocate a complaint, the government supports a complaint, the industry stays out, and the government launches a complaint. This takes place when $u_g^\tau < u_g - C$ and $u_i^\tau > u_i$. Utilities realized at the end of the game are $u_g - C$ and u_i. However, in this case the

government needs to observe the inconsistent trade barrier itself, as the industry prefers to keep the FTB in place. The probability of filing is then equal to *r*.

- Equilibrium 4: the industry does not advocate a complaint, the government does not observe the FTB. Irrespective of the government's preference regarding the FTB, no complaint can be launched. This takes place only if $u_i^\tau > u_i$. Utilities realized at the end of the game are u_g^τ and u_i^τ. The same equilibrium outcome is reached when the industry does not advocate a complaint, the government and the industry do not devote resources, and no complaint is filed. This takes place when $u_g > u_g^\tau > u_g - C$ and $u_i^\tau > u_i - C$. In this case, even when both parties prefer the removal of the FTB, no action is undertaken due to the cost of filing. This equilibrium outcome also emerges when the government exercises its veto power, namely when $u_g^\tau > u_g$, irrespective of the industry's actions or wishes.

Of course, we need to know what the effect is of FTBs on the government's and industry's utilities. We use the equilibrium prices obtained above, and apply these to the different equilibrium paths for the different FTBS. This allows us to solve this game for a variety of FTBs.

2.5 The effect of trade barriers on industry and government utility

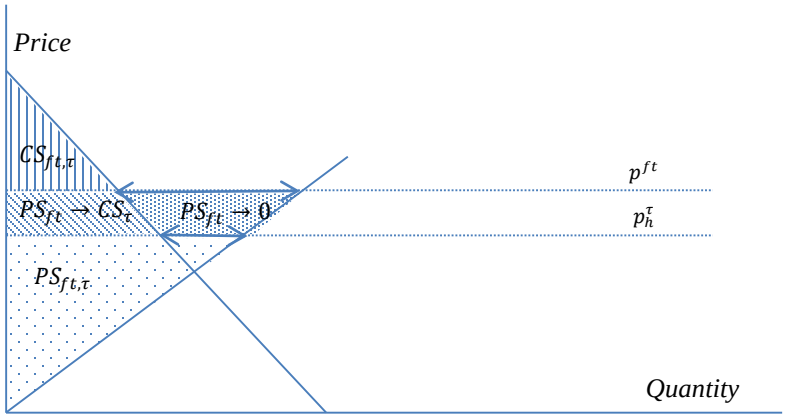
We categorized the different possible WTO inconsistent FTBs in three main categories. This section will graphically depict the effect of the different types of FTBs on the complainant's economy. The graphs show how consumer and producer surplus shift when the equilibrium prices move from free trade to the equilibrium prices under the FTBs with an unbiased government. Appendix 2 describes these results in more detail.

2.5.1 Export barriers

When the foreign country installs an export barrier on the products of the home country, the domestic price of the export product declines as the foreign government imports less (see Figure 3). As shown before the domestic price drops from p^{ft} to p_h^τ.

As established before, with an export barrier, $p_h^\tau < p_h^{ft}$. Since the domestic price drops with $\frac{(i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}$ and industry utility is impacted in the same direction, meaning that $\frac{\delta u_i}{\delta p_h} > 0$, the industry's utility is negatively affected by an export barrier.

Figure 3: Export barriers



The effect of an export barrier on government utility depends on consumer and producer utility. Consumer utility is affected positively when the domestic price lowers, $\frac{\delta u_{con}}{\delta p_h} < 0$. In appendix 2, we see that the impact of the price difference works in opposite but equally large ways for both the utilities of consumers and industry. The difference for government utility thus originates from the sizes that relate to the shifts in demand and supply. For an export barrier, domestic supply is greater than domestic demand (the exact sizes depend on the parameters used for delineating the supply and demand function), which holds even after the implementation of the export barrier (as long as the FTB is not import-prohibitive in the foreign country). Industry utility is consequently more negatively affected than the positive gains in consumer utility.

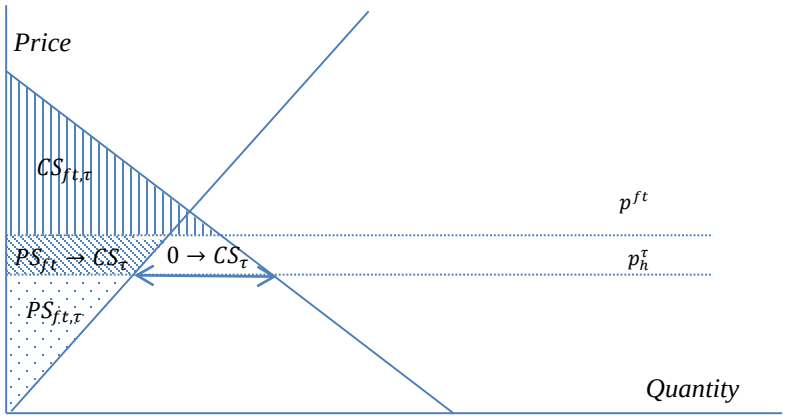
Since industry utility is negatively affected by an export barrier and more so than the gains to consumers, governmental utility will be lower with an export barrier.

2.5.2 Import-strengthening measures

Due to an import-strengthening measure, the imports form the foreign country in the domestic country rise. As demonstrated in section three, the result is a price drop from p^{ft} to p_h^{τ} (see Figure 4).

As established before, with an import-strengthening measure, $p_h^{\tau} < p_h$. Since the domestic price drops with $\frac{(i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}$ and industry utility does too, the industry's utility is negatively affected by an import-strengthening measure.

Figure 4: Import-strengthening measures



The effect of an import-strengthening measure on government utility depends on consumer and producer utilities. Consumer utility is affected positively when the domestic price lowers, $\frac{\delta u_{con}}{\delta p_h} < 0$. The price drop thus has opposite effects on consumer and producer utilities. The impact on government utility consequently depends on the intercepts and slopes of the demand and supply curves, as seen above. We assume that domestic supply is unable to satisfy domestic demand even in the absence of an import-strengthening measure. An import-strengthening measure further lowers domestic supply in equilibrium, because the domestic demand is to a larger extent satisfied by foreign imports. Since domestic demand exceeds domestic supply, the losses to producer utility are outweighed by the gains to consumer utility.

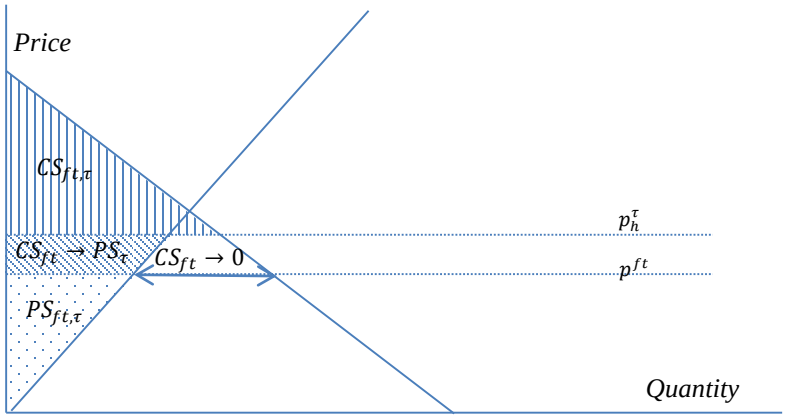
The government utility is consequently positively affected by this type of trade barrier.

2.5.3 Import-lowering measures

As shown in section 3, the domestic price rises when the foreign country installs an import-lowering measure, as foreign imports into the domestic market are lower (see Figure 5).

As established before, with an import-lowering measure, $p_h^{\tau} > p^{ft}$. Since the domestic price rises with $\frac{(i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}$ and industry utility is impacted in the same direction, the industry's utility is positively affected by an import-lowering measure.

Figure 5:Import-lowering FTBs



The effect of this type of FTB on government utility depends on consumer and producer utilities. We assume that domestic supply is smaller than domestic demand even after the implementation of the import-restricting measure by the foreign government (as long as the FTB is not import-prohibitive in the foreign country) (see appendix 2). The losses to consumer utility are then larger than the gains to the industry.

Since consumer utility is negatively affected by an import-lowering measure and outweighs the benefits to the industry, governmental utility will be lower with an import-lowering measure.

2.6 FTBs and types of government

This section studies the equilibrium solutions for the three categories of FTBs discussed in the previous section.

2.6.1 No domestic industry

The first (and simplest) instance is when the home country does not itself have a domestic industry to compete with the foreign industry. Since there is no domestic industry, the government only cares about the domestic consumers. Essentially this means that the government files a complaint when $u_{con} - C > u_{con}^{\tau}$. The government has to devote the resources for the preparation itself, and is also not notified by the industry of the existence of the FTB, so the probability (*r*) that the government finds out about the FTB will play a role. When the government fails to observe the FTB or when $u_{con} - C < u_{con}^{\tau}$,

the game ends with equilibrium 4 and the FTB remains unaddressed. When the government notices the FTB, two equilibriums occur depending on the FTB in question. When confronted with an export barrier or an import-strengthening measure, equilibrium 4 emerges and no complaint is launched. The only instance when a government might decide to file a WTO complaint is when it faces an import-lowering foreign trade measure. This results in a loss of consumer surplus, and equilibrium 3 then is the outcome.

Proposition 3: When there is no domestic industry, the only WTO disputes that are initiated revolve around FTBs that result in a lowering of the imports of the foreign country into the domestic country. However, such disputes only take place when the domestic country is able to observe the trade barrier and when the government cost to prepare the case is sufficiently low.

2.6.2 A domestic industry and an unbiased government

When the home country has an industry competing with the industries in the foreign country, the government also cares about the producer surplus realized by this industry. Let us first start by looking at a government that has no particular affiliation. For this kind of government $\beta = 1$.

When the foreign country has installed an export barrier, equilibrium 1 arises and disputes are filed up until $C = u_i - u_i^\tau$. Otherwise no complaint is filed. Industry is thus called upon to support a WTO complaint until the cost of the dispute is as high as its gain from litigation. In this instance, the government is able to use the fact that its interests are aligned with the industry to its advantage. Consequently, disputes that would be too expensive for the government to pursue, since the government also cares about the consumer surplus loss, can be filed. The government files disputes as long as $u_g - C > u_g^\tau$. When confronted with export barriers, we can hence expect to see the most intense private-public partnership, since both parties stand to gain from the removal of the trade barrier. We can thus expect that export barriers, if installed in the foreign country, are often subject to WTO litigation.

For the import-strengthening trade measures, equilibrium 4 emerges as the government is unresponsive to the industry's grievances.

For the category of import-lowering FTBs, equilibrium 3 emerges. Import-lowering trade measures are greeted favorably by the industry, and the government has to devote the resources to the preparation of the case. Consequently, the government files a complaint as long as $u_g - u_g^\tau > C$. Since the government cares about consumer surplus as well, the threshold cost of initiating a dispute is lower

than when the industry takes on the financial burden of a case. We consequently expect less WTO litigation dealing with import-lowering measures than with export barriers but more than with the import-strengthening measures. Moreover, the government might fail to observe this kind of trade barriers, since the industry will not advocate a WTO complaint, lowering the amount of import-lowering barriers that eventually make it to WTO litigation.

In all cases, if the cost of initiating a dispute is higher than the threshold costs described for the different FTBs, no complaint is launched, and equilibrium 4 emerges.

Proposition 4: With an unbiased government disputes can revolve around export barriers and import-lowering measures. The industry may bring export barriers to the government's attention and bears the cost of filing the complaint, whereas in the case of import-lowering measures the government has to observe the FTB itself and bear the burden of preparing the case for it to be filed. An unbiased government never undertakes action against import-strengthening measures.

2.6.3 A domestic industry and a government with a pro-producer bias

In this case, β is higher than with an unbiased government ($\beta > 1$). For the export barriers category, equilibrium 1 emerges. The industry sponsors complaints as long as $u_i - u_i^\tau > C$. In this case, the government again benefits by getting industry involvement, as it gets the removal of a utility-lowering export barrier for free. Noteworthy, the industry sponsors complaints to the same extent as it did with an unbiased government.

For import-strengthening trade measures, equilibrium 1 emerges under some conditions. Industry has to support such cases. This allows disputes to be filed as long as $C < u_i - u_i^\tau$. However, such measures only result in a complaint when the government has a strong industry bias. More specifically, for an import-strengthening measure to be addressed, $\beta * (u_i - u_i^\tau) - C > -(u_{con} - u_{con}^\tau)$. In this case, β should be rather high for the government to undertake action. In this case, equilibrium 2 might emerge. It is indeed noteworthy that many cases involving for example export subsidies have revolved around issues for which β is expected to be rather high. For example these disputes have related to agriculture (among others DS 35, DS103, DS365), and political strategic sectors such as auto (DS 106) and aircraft manufacturing (DS 46,DS 70,DS 71, DS222).

The import-lowering trade measures result in equilibrium 3, depending on the size of β. Equilibrium 3 emerges when the government pledges the financial resources itself, and complaints can then be filed

up to $(u_{con} - u_{con}^{\tau}) + \beta * (u_i - u_i^{\tau}) > C$. Only few of these disputes with a producer-biased government hence make it to WTO panels.

With regards to all these trade barriers, equilibrium 4 is the result when the cost exceeds the thresholds described for the different FTBs.

Proposition 5: With a pro producer biased government, all types of FTBs can be addressed. Export barriers are often addressed. The industry may also help to bring import-strengthening measures to the government's attention and pay for filing the complaint. Import-lowering measures need to be observed and prepared by the government itself.

2.6.4 A domestic government with a pro-consumer bias

In this instance the government has a bias in favor of the consumers, hence $\beta < 1$. An export barrier often results in equilibrium 4. In some instances a consumer biased government may file a complaint, which then results in equilibrium 1. This holds only if β is still relatively close to one, namely $\beta > \frac{(u_{con}^{\tau} - u_{con}) + C}{(u_i - u_i^{\tau})}$. In this instance the industry sponsors the complaint. Disputes can then be filed upon $C < u_i - u_i^{\tau}$. However, when either of the previous equations is not satisfied, no complaint is filed.

An import-strengthening measure results in equilibrium 4. Since the initial producer surplus translates directly in added consumer surplus, and since $\beta < 1$, there will never be a complaint.

An import-lowering measure results in equilibrium 3. The complaint is filed as long as $C < u_{con} - u_{con}^{\tau} + \beta * (u_i - u_i^{\tau})$.

Proposition 5: In the case of a consumer-biased government there are no complaints regarding import-strengthening measures. Few disputes revolve around export barriers compared to the other cases, whereas there are more disputes regarding import-lowering measures than under an unbiased government.

2.6.5 Implications of the results

Table 2 depicts the results of the analysis above. Whenever the cost is higher than indicated in this table, equilibrium 4 emerges.

Table 2: The filing of a complaint for the different FTBs

	Export Barrier	**Import-strengthening Measure**	**Import-lowering Measure**
No domestic industry	No complaint	No complaint	Eq.3 when $C < u_{con} - u_{con}^{\tau}$
No bias	Eq.1 when $C < u_i - u_i^{\tau}$ and $C < u_g - u_g^{\tau}$	No complaint	Eq.3 when $C < u_g - u_g^{\tau}$
Producer bias	Eq.1 when $C < u_i - u_i^{\tau}$ and $C < u_g - u_g^{\tau}$	Eq.1 when $C < u_i - u_i^{\tau}$ and $\frac{u_{con}^{\tau} - u_{con} + C}{(u_i - u_i^{\tau})} < \beta$	Eq.3 when $C < u_{con} - u_{con}^{\tau} + \beta * (u_i - u_i^{\tau})$
Consumer Bias	Eq.1 when $C < u_i - u_i^{\tau}$ and $\frac{u_{con}^{\tau} - u_{con} + C}{(u_i - u_i^{\tau})} < \beta$	No complaint	Eq.3 when $C < u_{con} - u_{con}^{\tau} + \beta * (u_i - u_i^{\tau})$

Depending on the cost (see next subsection), we observe the following general tendencies. Export barriers are expected to result in a complaint most often. A consumer biased government might decide to not undertake action against this type of FTBs. Import-strengthening measures are rarely addressed. Only a government that is strongly producer biased files complaints against this type of FTBs. Import-lowering measures can result in the filing of a complaint. The likelihood of a complaint is higher when the government cares less about the domestic industry.

Table 1 presented the number of disputes for the different FTBs. It indicated that export barriers feature extensively in WTO litigation, import-strengthening measures significantly, and import-lowering measures almost never. Our model has similar results for the exports barrier category. For the other two categories, Table 3 indicates different results. Our model leads us to expect that import-lowering measures would feature more heavily than import-strengthening measures. There are a few possible explanations for this discrepancy. First, data on the full set of erected trade barriers is lacking. The caveat that one needs to keep in mind, is that the results in Table 1 do not give us any guidance on the relative number of complaints for each of the types of FTBs. Second, the government needs to provide resources for complaints related to import-lowering measures, and it needs to notice this type of FTBs itself. It might hence be that the government lacks these capacities. Third, if governments are generally producer-biased, the results in Table 2 coincide with the number of disputes in Table 1.

The cost of litigation

As demonstrated by our model, the cost of litigation determines the number of complaints filed against the different FTBs.

There are large differences over the different FTBs with regards to the threshold cost that prohibits a complaint to be filed as well as to whom eventually takes up the financial burden. In general, the most costly disputes can be undertaken when they are targeting an export barrier. When faced with this kind of FTBs, the industry provides support. The same holds for the import-strengthening measures. Industry gladly supports a complaint regarding these measures. However, for the government, the negative effect on consumer surplus prohibits the filing of more high cost cases.

Import-lowering measures are only addressed when the cost of a complaint is rather low. The threshold value of the cost to deter a complaint is significantly lower than with the previous two types of FTBs. This is because the government always has to pay for the complaint, and due to the negative effect on industry utility which lowers the value of filing a complaint for a government. Expensive disputes are only undertaken by a consumer biased government.

In general, the government can rely on the support of the industry (except for import-lowering measures). This can be beneficial since the industry in this model can back more expensive cases than the government as the latter always has to balance consumers and industry interests.

Some countries are better endowed with financial resources than others. Some cash-strapped developing countries might for example find it difficult to contribute the financial support during the pre-litigation game. Once a complaint is filed at the WTO, these countries can benefit from a certain procedural support. For example, the Advisory Center on Law of the WTO (ACLW) provides legal support at a reduced rate. However, the ACLW does not help in the pre-litigation phase (Bown and Hoekman, 2005: Hoekman and Kostecki, 2009). Consequently, developing countries need to look elsewhere for support. Since they might lack the resources to prepare a complaint themselves, they need to rely on the industry to support a complaint. This dependency shifts the type of cases that can be undertaken. Our findings suggest that developing countries file complaints against export barriers, and when the government is producer biased, import-strengthening measures. The result is that disputes involving import-lowering measures are not taken up as developing countries' governments might lack the resources to undertake action, much to the detriment of consumers and government welfare.

An example of a case where developing countries fall short, is the $47bn in subsidies paid to rich-country producers in the past 10 years has created barriers for the 15 million cotton farmers across West Africa. However, as demonstrated in our model it is difficult for developing countries to act against such measures.[18] Notably, there has not been a single case where an African country acted as a complainant. Developing countries in other continents have a slightly better record.

This can also be explained by the problems faced by developing countries in the fact-finding pre-litigation. More specifically, most developing countries do not provide a formal petition method by which private industry can lobby the government to initiate a complaint on its behalf. This might further lower the amount of complaints filed by developing countries. The WTO could help in this respect. An institutionalized fact-finding agency that complements the workings of the ACLW should be considered a necessary and favorable addition to the WTO structure. Alternatively (or complementary) to such a development, it is up to developing countries to foster a deeper public-private partnership. Future research should study these proposals in more depth.

Veto power and private access to the WTO DSU

As it is the government that ultimately decides whether to file a complaint, it can exercise veto power. This veto powers explains the selection of FTBs for WTO litigation. The government exclusively favors complaints that increase its utility. Hence, all cases whereby the FTB results in a loss for either the industry or the consumers that is not compensated by the other party's gain, can be considered by the government if there is no particular government affiliation. More specifically, in the case of export barriers, the industry generally finds the government very supportive to its grievances. Only a strongly consumer-biased government might veto such a complaint. The government will veto all complaints regarding import-strengthening barriers, except for when it strongly affiliated to the industry. A complaint dealing with import-lowering measures is only vetoed when the government is strongly producer-biased. The government veto is consequently an important feature of the pre-litigation game as it affects which FTBs eventually make it to the WTO.

The industry in a way can obstruct the filing of disputes by not advocating a WTO complaint. In the case of import-lowering measures, the industry never advocates a WTO complaint, which can result in these measures to be kept in place even though the government would prefer these to be removed. Not

[18] http://www.theguardian.com/global-development/poverty-matters/2011/nov/14/wto-fails-developing-countries

advocating a WTO complaint is a strategic decision for the industry, since this lowers the likelihood of governmental action.

Some observers have argued in favor of legal standing of private organizations and parties within WTO DSU (for more on this, see Sykes, 2005). This would mean that governmental approval is no longer a requisite for litigation. Using the results described above, we argue that this would lead to a spectacular rise of disputes dealing with import-strengthening measures. However, the model described above clearly indicates that this would be to the detriment of consumers and the government.

This result might explain why governments, the parties to the WTO agreements, are not in favor of granting private parties the right to WTO litigation. The fact that governments act as a political filter allows them to maximize their national utilities.

2.7 Conclusion

This paper looks into the industry-government interaction that takes place before a WTO complaint is filed. This interaction is essentially the prerequisite to WTO trials, but has yet to capture significant attention of WTO scholars. This paper is the first step towards a deeper understanding of the forces at work during the selection of FTBs for WTO litigation. Future research should study the empirical origins and the impact of this selection effect. We find that certain FTBs are more likely to be addressed in the WTO DSU than others.

The paper looks into the industry's and the government's utilities of certain FTBs. Our findings support the idea that the governmental veto in the filing of complaints shifts the nature of FTBs selected for litigation. The veto powers in filing a complaint granted to governments cause the number of disputes revolving around measures lowering the imports from a foreign country to be very low due to the effect on consumers. In the case of measures lowering domestic exports, the governmental plays out to a small extent since the government’s and the industry’s interest are closely aligned. For measures strengthening foreign imports, the government is exercising its veto powers to a lesser extent as well since these result in a larger welfare loss. When the WTO would allow access to private parties, import-strengthening measure and, to a lesser extent, export barriers would feature more extensively on the list of WTO disputes.

We find that the industry-government interaction in anticipation of a WTO complaint is decisive in the number of FTBs that make it into WTO disputes and the party providing the resources for litigation. Since the government often relies on the industry for bringing the FTB to its attention, fewer complaints would be filed without this partnership. The costs of preparing a complaint is most often carried by the industry. When addressing import-lowering measures, the government always has to provide these resources.

Consequently, the selection of trade barriers for WTO litigation critically depends on the type of trade barrier, the cost of litigation, and the public-private partnership between the government and its industries.

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2.9 Appendix

2.9.1 Appendix 1: Equilibrium Prices

As stipulated in section 2.3, we use the following set-up for demand and supply functions:

Domestic supply and demand are given by:

$$S_h = a_h + e_h p_h$$

$$D_h = b_h - i_h p_h$$

Similarly, for the foreign country:

$$S_f = a_f + e_f p_f$$

$$D_f = b_f - i_f p_f$$

In the next subsection, this set-up is applied to the different FTBs and solved for the equilibrium prices.

Free Trade

For the free trade benchmark price, total supply needs to equal total demand for a single equilibrium price. Consequently:

$$a_h + e_h p_{ft} + \ a_f + e_f p_{ft} = b_h - i_h p_{ft} + b_f - i_f p_{ft}$$

Solving this:

$$p_{ft}^* = \frac{-a_h - a_f + b_h + b_f}{e_h + e_f + i_h + i_f}$$

Export barrier

In this case, the foreign country imposes a specific tariff on its imports of a specific product. It will now cost more to move the product from the domestic country to the foreign country.

As a result the supply to the foreign market will fall inducing an increase in the price. Hence, both the foreign production and the imported domestic products will rise in price. The higher price will reduce the foreign country import demand.

The reduced supply to the foreign country shifts back supply to the domestic market. Since the foreign country is assumed to be a "large" importer, the supply shifted back to the domestic market is large enough to induce a reduction in the domestic price. The lower price reduces domestic export supply.

A new equilibrium is reached when the following two conditions are satisfied.

$$p_h^\tau + \tau = p_f^\tau$$

$$X_{h,f}(p_h^\tau) = M_{f,h}(p_f^\tau)$$

The first condition represents a price wedge between the final foreign and domestic price, equal to the amount of the tariff. The prices must differ by the tariff because the domestic suppliers must receive the same price for their product, regardless of where the product is sold. Since a tax is collected at the border, the only way for these price equalities within countries to arise is if the price differs across countries by the amount of the tax.

The second condition states that the amount the domestic country wants to export at its new lower price must be equal to the amount the foreign country wants to import at its new higher price. This condition guarantees that world supply equals the world demand. The result is a fall in the domestic price (for more, see for example Suranovic, 2010).

When we apply the demand and supply set-up established before, the following equilibrium prices result. Since,

$$X_{h,f}(p_h^\tau) = M_{f,h}(p_f^\tau)$$

$$S_h(p_h^\tau) - D_h(p_h^\tau) = D_f\left(p_f^\tau\right) - S_f(p_f^\tau)$$

With an export barrier, we can now use the fact that $p_h^\tau + \tau = p_f^\tau$

$$(a_h + e_h p_h^\tau) - \left(b_h - i_h p_{ft}\right) = \left(b_f - i_f * (p_h^\tau + \tau)\right) - \left(a_f + e_f * (p_h^\tau + \tau)\right)$$

This solves to the domestic equilibrium price with an export barrier:

$$p_h^{\tau *} = \frac{(-a_h - a_f + b_h + b_f - i_f * \tau - e_f * \tau)}{e_h + e_f + i_h + i_f}$$

Import-Strengthening Measures

In this case, the exporting country implements a specific export subsidy on exports of a certain product. An export subsidy will increase the exports to the domestic market.

As a result the supply of the product to the domestic market rises, causing a decrease of its price. Since the foreign country is assumed to be a "large" country, the price of this certain product sold in the domestic market falls. The lower price raises the import demand in the domestic country.

The higher imports to the domestic country reduces the supply available in the foreign country and induce an increase in the foreign price. The higher price raises the foreign country's export supply.

A new subsidy-ridden equilibrium is reached when the following two conditions are satisfied.

$$p_f^\tau = p_h^\tau + \tau$$

$$X_{f,h}(p_f^\tau) = M_{h,f}(p_h^\tau)$$

The first condition represents a price wedge between the final foreign price and the domestic price, equal to the amount of the export subsidy. The prices must differ by the subsidy because foreign suppliers must receive the same price for their product, regardless of where the product is sold. Since a subsidy is paid to foreign exporters, the only way for these price equalities within countries to arise is if the price differs across countries by the amount of the subsidy.

The second condition states that the amount the foreign country exports at its new higher price must be equal to the domestic imports at its new lower price. This condition guarantees that world supply equals world demand. The result is an equilibrium price lower in the domestic country, combined with higher imports. For the foreign country, its domestic price will be higher, since more will be exported (for more on this, see for example Suranovic, 2010).

We can now solve for the equilibrium price.

$$X_{f,h}(p_f^\tau) = M_{h,f}(p_h^\tau)$$

$$S_f(p_f^\tau) - D_f(p_f^\tau) = D_h(p_h^\tau) - S_h(p_h^\tau)$$

Next, we also know that $p_f^\tau = p_h^\tau + \tau$. Consequently:

$$S_f(p_h^\tau + \tau) - D_f(p_h^\tau + \tau) = D_h(p_h^\tau) - S_h(p_h^\tau)$$

$$\left(a_f + e_f * (p_h^\tau + \tau)\right) - \left(b_f - i_f * (p_h^\tau + \tau)\right) = (b_h - i_h * p_h^\tau) - (a_h + e_h * p_h^\tau)$$

Solving this gives us the domestic equilibrium price for an import-strengthening measure:

$$p_h^{\tau*} = \frac{(-a_h - a_f + b_h + b_f - i_f * \tau - e_f * \tau)}{e_h + e_f + i_h + i_f}$$

Import-lowering measure

For an import-lowering barrier (for example export subsidy), the reasoning and graphs are similar, but go in the other direction.

$$p_h^\tau = p_f^\tau + \tau$$

For an import-lowering measure, the following equation describes the basic relationship between the two countries.

$$X_{f,h}\left(p_f^\tau\right) = M_{h,f}(p_h^\tau)$$

$$S_f\left(p_f^\tau\right) - D_f\left(p_f^\tau\right) = D_h(p_h^\tau) - S_h(p_h^\tau)$$

We can now solve, taking into account that: $p_h^\tau = p_f^\tau + \tau$

$$S_f(p_h^\tau - \tau) - D_f(p_h^\tau - \tau) = D_h(p_h^\tau) - S_h(p_h^\tau)$$

$$\left(a_f + e_f * (p_h^\tau - \tau)\right) - \left(b_f - i_f * (p_h^\tau - \tau)\right) = (b_h - i_h * p_h^\tau) - (a_h + e_h * p_h^\tau)$$

The domestic equilibrium price for an import-lowering measure consequently equals:

$$p_h^{\tau *} = \frac{(-a_h - a_f + b_h + b_f + i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}$$

2.9.2 Appendix 2: the solutions for the utilities of government and industry

This gives rise to the following utilities for government and industry (with the prices solved for above):

No complaint:

-Domestic industry utility when the FTB remains unaddressed:

$$u_i^{\tau} = \frac{1}{2} * \left[a_h P_h^{\tau} + e_h {P_h^{\tau}}^2 - a_h e_h P_h^{\tau} - {a_h}^2\right]$$

-Government utility when the FTB remains unaddressed:

$$u_g^{\tau} = \frac{1}{2} * \left[\left({b_h}^2 - b_h i_h P_h^{\tau} - b_h P_h^{\tau} + {P_h^{\tau}}^2\right) + \beta * (a_h P_h^{\tau} + e_h {P_h^{\tau}}^2 - a_h e_h P_h^{\tau} - {a_h}^2)\right]$$

When the FTB gets removed after a complaint has been filed

-Domestic Industry:

$$u_i = \frac{1}{2} * \left[a_h P_h^{ft} + e_h {P_h^{ft}}^2 - a_h e_h P_h^{ft} - {a_h}^2\right]$$

Hence

$$u_g = \frac{1}{2} * \left[\left({b_h}^2 - b_h i_h P_h^{ft} - b_h P_h^{ft} + {P_h^{ft}}^2\right) + \beta * (a_h P_h^{ft} + e_h {P_h^{ft}}^2 - a_h e_h P_h^{ft} - {a_h}^2)\right]$$

The value of filing a case: Industry

Now we can establish the merits of filing a case. First, the industry's value of a complaint equals:

$$u_i - u_i^{\tau} = \frac{1}{2} * \left[a_h P_h^{ft} + e_h {P_h^{ft}}^2 - a_h e_h P_h^{ft} - {a_h}^2\right] - \frac{1}{2} * \left[a_h P_h^{\tau} + e_h {P_h^{\tau}}^2 - a_h e_h P_h^{\tau} - {a_h}^2\right]$$

$$u_i - u_i^{\tau} = \frac{1}{2} * a_h * \left(P_h^{ft} - P_h^{\tau}\right) + \frac{1}{2} * e_h * \left({P_h^{ft}}^2 - {P_h^{\tau}}^2\right) - \frac{1}{2} * a_h * e_h (P_h^{ft} - P_h^{\tau})$$

Regarding export barriers and import-lowering measures, there is no need to further work out this equation. Using that ${P_h^{ft}}^2 - {P_h^{\tau}}^2$ can be simplified to $\left(P_h^{ft} - P_h^{\tau}\right) * \left(P_h^{ft} + P_h^{\tau}\right)$, this equation will be positive as long as $\left(P_h^{ft} + P_h^{\tau}\right) > a_h$. Since a_h equals the intercept for the supply curve, the first part of this equation will always be higher. Hence, the industry gets more utility from a complaint than from the status quo.

For import-strengthening barriers, $P_h^{ft} < P_h^{\tau}$. Consequently the signs of the differential utility function need to adapted.

$$u_i - u_i^{\tau} = -\frac{1}{2} * a_h * \left(P_h^{\tau} - P_h^{ft}\right) - \frac{1}{2} * e_h * \left({P_h^{\tau}}^2 - {P_h^{ft}}^2\right) + \frac{1}{2} * a_h * e_h (P_h^{\tau} - P_h^{ft})$$

For import-strengthening barriers, the industry loses with the filing of a complaint.

For completeness, we can further delve into the exact gains, by using the results of section four, which demonstrated that $P_h^{ft} - P_h^{\tau}$ equals $\frac{(i_f*\tau+e_f*\tau)}{e_h+e_f+i_h+i_f}$ with a positive or negative sign depending on the FTB in question.

Inserting this in the utility functions, we find that for export barriers and for import-lowering measures, the following results:

$$u_i - u_i^{\tau} = \frac{1}{2} * a_h * \left(\frac{\left(i_f * \tau + e_f * \tau\right)}{e_h + e_f + i_h + i_f}\right) + \frac{1}{2} * e_h * \left[\left(\frac{\left(-a_h - a_f + b_h + b_f\right)}{e_h + e_f + i_h + i_f}\right)^2 - \left(\frac{\left(-a_h - a_f + b_h + b_f - i_f * \tau - e_f * \tau\right)}{e_h + e_f + i_h + i_f}\right)^2\right] - \frac{1}{2} * a_h * e_h \left(\frac{(i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}\right)$$

For import-strengthening measures, the utility of filing equals:

$$u_i - u_i^{\tau} = -\frac{1}{2} * a_h * \left(\frac{\left(i_f * \tau + e_f * \tau\right)}{e_h + e_f + i_h + i_f}\right) - \frac{1}{2} * e_h * \left[\left(\frac{\left(-a_h - a_f + b_h + b_f\right)}{e_h + e_f + i_h + i_f}\right)^2 - \left(\frac{\left(-a_h - a_f + b_h + b_f + i_f * \tau + e_f * \tau\right)}{e_h + e_f + i_h + i_f}\right)^2\right] + \frac{1}{2} * a_h * e_h \left(\frac{(i_f * \tau + e_f * \tau)}{e_h + e_f + i_h + i_f}\right)$$

<u>The value of filing a case: government</u>

The government utility without a complaint can be written as follows:

$$u_g = \frac{1}{2} * \left(b_h - i_h * P_h^{ft}\right) * \left(b_h - P_h^{ft}\right) + \beta * \left(\frac{1}{2} * \left(a_h + e_h * P_h^{ft}\right) * \left(P_h^{ft} - a_h\right)\right)$$

We already solved the second part dealing with the industry's utility beforehand, so let us know focus on the first part (the CS) and the utility for consumers u_{con}.

$$u_{con} = \frac{1}{2} * \left(b_h - i_h * P_h^{ft}\right) * \left(b_h - P_h^{ft}\right)$$

With a FTB, the utility for consumers equals:

$$u_{con}^{\tau} = \frac{1}{2} * \left(b_h - i_h * P_h^{\tau}\right) * \left(b_h - P_h^{\tau}\right)$$

Consequently:

$$u_{con} - u_{con}^{\tau} = \frac{1}{2} * \left(b_h - i_h * P_h^{ft}\right) * \left(b_h - P_h^{ft}\right) - \frac{1}{2} * (b_h - i_h * P_h^{\tau}) * (b_h - P_h^{\tau})$$

For import-lowering measures and export barriers, this equation can be rewritten as:

$$u_{con} - u_{con}^{\tau} = -\frac{1}{2} * b_h * i_h * \left(P_h^{ft} - P_h^{\tau}\right) - \frac{1}{2} * b_h * \left(P_h^{ft} - P_h^{\tau}\right) + \frac{1}{2} * i_h * \left(P_h^{ft} - P_h^{\tau}\right) * \left(P_h^{ft} + P_h^{\tau}\right)$$

Using the equilibrium prices and since b_h denotes the highest possible price, the utility of initiating a dispute for the consumers is always negative.

For import-strengthening measures

$$u_{con} - u_{con}^{\tau} = \frac{1}{2} * b_h * i_h * \left(P_h^{\tau} - P_h^{ft}\right) + \frac{1}{2} * b_h * \left(P_h^{\tau} - P_h^{ft}\right) - \frac{1}{2} * i_h * \left(P_h^{\tau} - P_h^{ft}\right) * \left(P_h^{ft} + P_h^{\tau}\right)$$

Using the equilibrium prices and since b_h denotes the highest possible price, the utility of initiating a dispute for the consumers is always positive.

Government utility is a combination of both the utility of the industry and the utility of the consumers. Since for all FTBs, both partitions of the government utility have different signs, the utility of the government depends on the sizes of the utilities of both parties. Moreover, in our definition of government utility, we allowed for some kind of government affiliation with industries, by including a factor β. Consequently, the question whether the government benefits from a complaint boils down to the exact sizes of this β and the utilities for consumers and industry.

For an export barrier, when $\beta = 1$, the government will file a complaint, since the domestic country is an exporter, and consequently $S_h > D_h$.

For an import-lowering measure, when $\beta = 1$, the government prefers to file a complaint, since the domestic country is an importer, and consequently $S_h < D_h$. For these two types of FTBs, the following equation denotes governmental utility of filing a complaint:

$$u_g - u_g^{\tau} = -\frac{1}{2} * b_h * i_h * \left(P_h^{ft} - P_h^{\tau}\right) - \frac{1}{2} * b_h * \left(P_h^{ft} - P_h^{\tau}\right) + \frac{1}{2} * i_h * \left(P_h^{ft} - P_h^{\tau}\right) * \left(P_h^{ft} + P_h^{\tau}\right) + \beta * \left(\frac{1}{2} * a_h * \left(P_h^{ft} - P_h^{\tau}\right) + \frac{1}{2} * e_h * \left(P_h^{ft^2} - P_h^{\tau^2}\right) - \frac{1}{2} * a_h * e_h (P_h^{ft} - P_h^{\tau})\right)$$

For an import-strengthening measure, the country is an importer $S_h < D_h$. This makes that a government with no particular affiliation $\beta = 1$ will not be willing to file a complaint. For this type of FTBs, the following equation denotes the government utility of undertaking action:

$$u_g - u_g^{\tau} = \frac{1}{2} * b_h * i_h * \left(P_h^{\tau} - P_h^{ft}\right) + \frac{1}{2} * b_h * \left(P_h^{\tau} - P_h^{ft}\right) - \frac{1}{2} * i_h * \left(P_h^{\tau} - P_h^{ft}\right) * \left(P_h^{ft} + P_h^{\tau}\right) + \beta * \left(-\frac{1}{2} * a_h * \left(P_h^{\tau} - P_h^{ft}\right) - \frac{1}{2} * e_h * \left(P_h^{\tau^2} - P_h^{ft^2}\right) + \frac{1}{2} * a_h * e_h * (P_h^{\tau} - P_h^{ft})\right)$$

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